

Eagle Audubon Society (EAS)

A Primer on Climate Change and Sustainability

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PURPOSE

This primer is to give members of Eagle Audubon Society who are not scientists information about climate change and the related topic of sustainability. Climate change is certainly in the news, as drought, wildfires and flooding are increasingly connected to climate change. Some members may be familiar with this material, but others may find information that is new to them. Part One focuses on climate change. Part Two revisits the topic of sustainability, which is one way of framing the ideas about how something could be done about climate change. Part Two also explores the concept of Earth consciousness—being aware of how humanity is connected to the Earth and other living beings, and how we can all learn to survive together.

For a shorter read, both parts have a summary available in a shorter document.

Part Two: Sustainability and Earth Consciousness

SUMMARY

- Sustainability can be defined as: *“Living well for all, now and in the future, within the means of the environment.”* (Santone, 2011)
- Sustainability is more than the knowledge areas of People, Planet, and Profit. It is also about aesthetic appreciation and acting to personally grow and take part.
- Becoming more sustainable will take more than tinkering.
- It may be better not to express different views about the environment and sustainability as either wrong or right. A better description of different views may be that people are either unaware or have primitive views, or that they are aware, and have advanced views.
- Understanding of how the Earth works can best be gained through experiential learning and intergenerational storytelling.
- Humans have an innate urge to affiliate with other living things. This is Biophilia. The opposite is called Biophobia, and mostly occurs in people with little first-hand experience with the Earth and other living beings.
- A healthy human and Earth relationship will require a re-examination of most of our public policy.

INTRODUCTION

Before retiring from Michigan State University, I was part of a team of faculty and Extension Specialists who worked to provide interested communities information on how they could become sustainable or at least more sustainable—whatever they thought, and we thought, that meant. Usually, community officials and residents reported that they had heard the phrase: people, planet, and profit. Generally, this was interpreted by community members to mean that society and the economy could thrive without much damage to the environment. The term “people,” was often interchanged with social equity; “profit” with a rising economy (although with new, greener segments); and “planet” with reducing pollution and protecting endangered species. Those were the belief systems (paradigms) that our team encountered. In addition, there was the tension of making sure that environmental protection did not put a damper on the economy.

Below, let’s look at some of the belief systems regarding sustainability.

The role of what we believe about the world (paradigms and consciousness)

Paradigms “A theory or a group of ideas about how something should be done, made, or thought about.” (Merriam-Webster.com. 2022)

According to Dr. David Orr, Oberlin College, the current economic/social/environmental paradigm is:

“We are prone to tinker at the edges of the status quo and then are puzzled when things do not improve much, and even larger disasters occur.” (David Orr, 2014)

“Consciousness is being aware of an external object, quality or fact.” (<https://www.merriam-webster.com/dictionary/consciousness>, 2022)

Three sustainability definitions

Sustainability. One can hear a lot of grumbling that this is an over-used term. Confusion over what it means is a greater problem for people. They may be thinking, how does the phrase people, planet, and profit relate to me, and does it threaten the lifestyle I enjoy? An oft repeated definition is: *“Sustainability is enabling all species to thrive, across generations, in ways that maintain the ability of the larger environment (the containing system) to support this.”*

“Sustainability is often thought of as a long-term goal (i.e. a more sustainable world), while sustainable development refers to the many processes and pathways to achieve it.” (UNESCO, 2015)

Susan Santone, founder of Creative Change Educational Solutions and instructor at the University of Michigan suggests a simpler definition: *“Living well for all, now and in the future, within the means of the environment.”* (Santone, 2011) Still, the execution of the concept is complex.

The group of Michigan State University faculty and staff I worked with looked at why sustainability seemed so difficult for people to engage and make real progress. They came up

with a different approach to thinking about sustainability. It involved the usual people, planet, profit mantra, but expressed differently.

The group expressed “planet” as Ecological Integrity—knowledge of basic ecological principles and the ability to apply ecological science to current issues. “People” was expressed as Community Well-Being/Social Justice—equitable sharing of benefits of sustainability strategies. “Profit” was expressed as Economic Vitality—knowledge of how to apply economic systems to the equitable benefit of society. The team added a fourth knowledge area: Aesthetic Quality—recognition of the basic human value of beauty and understanding of how to apply it to communities. Many aspects of aesthetic quality, such as unity, harmony, and variety are in fact, instinctive. That is a discussion for another time, but we can probably admit to an important reason we like birds and want to protect them is their beauty.

You might notice that the three modified terms above and aesthetic quality are largely knowledge areas. One can know a lot about those topics and yet nothing happens to make a community or the world more sustainable. Four action areas of sustainability were proposed. Without action, sustainability knowledge has no sustainability outcomes. These action areas are:

Civic Responsibility—the use of knowledge of the responsibilities of citizens and communities in dialogue, decision making and capacity building on local, regional and global issues.

Systems Interdependence/Thinking—recognizing multiple systems and feedback loops at play in an issue and incorporating multiple groups, perspectives and institutions in decision making.

Critical Thinking—the ability to recognize, invite and consider a full range of evidence, strengths and weaknesses across different paradigms recognizing uncertainty, biases, and assumptions; and using that range in capacity building and the decision-making process.

Personal Growth (Personal Development and Self-Awareness)—recognizing one’s personal values and those of others related to issues and being provided the opportunity for growth and capacity building.

It was the intent of the MSU group that as knowledge was gained about sustainability strategies, action could be applied to the real-world areas of energy, water, food, land, waste, wildlife, transportation, shelter, and others.

Earth consciousness

It can be easy to say someone is either wrong or right about the environment. Perhaps there are more productive ways to look at the disparity, such as people having either primitive or advanced views. One could also say that folks may be unaware of how we treat the Earth, or that they are aware of how the Earth is treated and what it would take to treat the Earth as if we know it supports our lives. See Table 1, below.

Table 1. The terms, “primitive/unaware” and “advanced/aware” when described using an Earth consciousness paradigm.

Primitive/Unaware	Advanced/Aware
Believes Earth’s resources can provide unlimited wealth to humans.	Understands that Earth’s resources are finite, and the wealth provided to living beings has to be in balance with those resources.
Believes that human beings are separate from other living beings and the Earth.	Recognizes that humans are one group among many living beings on Earth.
Language objectifies living beings other than humans	Language recognizes personhood of all living beings
Denies or defies the thermodynamic and chemical principles guiding natural Earth systems	Understands and works with the thermodynamic and chemical principles guiding natural Earth systems
Ignores the base of the food chain, soil health	Understands soil health and contributes to it
Plans for the greatest economic benefit for the current human generation	Plans for the well-being of the current and multiple future generations of human and other living beings
Tells stories that celebrate human dominance over and destruction of other living beings and the Earth	Tells stories about the sophisticated and reciprocal relationship of humans, other living beings and the Earth

The primitive/unaware set of paradigms is, unfortunately, deeply ingrained in some belief systems and Western education. It has been for millennia. The advanced/aware set of paradigms is often represented in the beliefs and teachings of indigenous peoples.

Storytelling and experiential learning

A paradigm of sustainability and Earth consciousness will include broadly instilled, but deep knowledge of how Earth systems work, systems thinking and analysis: thermodynamics, nutrient cycling, physics, biochemistry, photosynthesis, food chain and soil health, plant succession, geologic processes, climate and weather, hydrologic cycle, carbon cycle, insect and plant interactions, animal and plant interaction, fungi and plant and animal interactions, natural medicines, plant and insect adaptive mechanisms, etc.

This knowledge can be shared in two ways. One, it can be widely shared among all people and generations, especially through intergenerational teaching, learning, discourse, and storytelling. Two, it can be derived from observation and from those who have developed such knowledge previously. The observational science of Shamans is several thousand years old. Plants and animals have been working out how to live here for several million years. We need to be considering knowledge from all those sources. As June Gorman, Transformative Education Forum/Education Chair, UNA-USA Council of Chapters and Divisions suggests, we need to beware of over-valuing formal systems of education, based on textual and rational dominance over more holistic, experimental, and informal systems of education (Gorman 2015).

There is some renewed interest in learning from the descendants of indigenous peoples. Despite efforts by Western colonists to prohibit indigenous children in North America and elsewhere

from learning their own languages, beliefs, and knowledge about the world, some descendants kept that knowledge alive. It is available to all of us if we ask. A book that answers as if we asked, and that I read several years ago is recently on the New York Times best seller list. It is *Braiding Sweetgrass, Indigenous Wisdom, Scientific Knowledge, and the Teaching of Plants*, by Robin Wall Kimmerer. It is illustrative of the primitive/unaware and advanced/aware dichotomy.

The economy verses environment world view pits economic vitality against a healthy Earth and the living beings on it. Measures to protect the environment sometimes can be costly. Sometimes they save money. What may be missing is the view that protection methods are investments. We make investments in infrastructure and equipment that does environmental damage—why not invest in infrastructure and equipment that protects the environment instead?

In all the discussion of climate change and global warming, carbon, especially in the form of carbon dioxide (CO₂), is made out to be a villain. On the contrary, carbon is essential to life on Earth. Humans and other living beings are carbon-based life forms. Carbon is stored by plants and other organisms in the soil, and then used by plants to produce vegetative matter, fruits, and vegetables that insects and animals, including humans, eat. The problem is that humans are also placing carbon where it does not belong (in the atmosphere) in life-threatening amounts. We treat the atmosphere as a carbon (and other chemical) landfill.

Recognition of biophilia and biophobia

Humans have an innate urge to affiliate with other living things. As E.O. Wilson wrote, this is biophilia. (Wilson, 1984) He also asked, is it possible that humanity will love life enough to save it? (Wilson, 1984) Unfortunately, there is an opposite, biophobia, which is the rejection of the natural world and an affinity for one of human construction. While early humans evolved in the natural world and we have it in our genes to seek out the natural world, some of our belief systems and industrialization have led to a large population of people estranged from it. In our urban settings, we pay homage to nature with ornamental landscapes. We are making some progress toward biophilia with programs such as Audubon's Plants for Birds.

Policies in support of Earth consciousness

The consciousness of a society is in part expressed through policy. If we consider the transformations needed for a new Earth consciousness, the following are some of the policies that need to be adopted by governments to enable an Earth consciousness to flourish. There are many others.

- Highest and best use for land will not be residential, but carbon sequestration, food, fiber and biomass production, and wind and solar farms. Currently in most places in America, the practice of designating a developed use as the highest and best is typical and leads to the loss of undeveloped land for natural resource uses, due to the levy of high taxation rates that preclude such uses and for the purpose of encouraging a switch to development.
- Fast track clean energy from renewable sources. Fossil fuels are becoming more expensive to extract. In the future, oil and gas may be reserved for essential uses.

Society will need some of the fossil fuels we can still afford to extract to build a renewable energy system for society, but oil and gas will someday be unaffordable.

- The natural hydrologic system will not be used to convey and dilute wastes and other pollutants. The carrying capacity of our natural resources to absorb waste has been exceeded, and the result is the decline of water quality, a decline in the capacity of our natural water bodies to support the food chain, and an increase in the cost to treat water for human consumption. Technologies exist to separate all waste from natural water bodies but need to be brought to scale.
- Agricultural policy will favor poly culture of perennial crops. Agricultural subsidies, now largely in the form of R & D funding, favors annual row crops in the production of grains, an unsustainable method of growing food.
- Carbon and other earth materials will not be placed where it cannot be of benefit or does harm. Currently those are placed in atmospheric or terrestrial landfills, in the latter as waste.
- Cost benefit analysis includes previously externalized costs and benefits. In the example of coal use for generating electricity, only extraction, transportation, and electrical generation and distribution infrastructure are born by utilities, with their shareholders paying only those costs against their profits. Utility rate payers bear those costs, plus the profits for shareholders, along with the costs for increased health care due to air pollution, and the tax payer costs to clean up polluted land and water where coal is extracted. A further cost to rate payers is the increased health risk of eating fish laced with Mercury, a result of the deposition of coal-fired energy plant exhausts. Some of these external costs have been calculated to effectively double the “rates,” people pay for electricity. However, they are not currently calculated against the profits utility shareholders receive.
- A change in education policy to provide experiential education to develop critical thinking, systems thinking and personal growth around social equity, aesthetic quality, economic vitality and ecological integrity.

“What's the use of a fine house if you haven't got a tolerable planet to put it on?”
(Thoreau, 1894)

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